TR

ROUGH TERRAIN CRANE

TR-80M
TR-80ML

JAPANESE SPECIFICATIONS

OUTLINE	SPEC. NO.
Max. total rated load 4.9 ton	TR-80M-1-00103
Max. total rated load 8.0 ton	TR-80M-1-00105

Control No. JA-03

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TR-80ML, TR-80M

CRANE SPECIFICATIONS

CRANE CAPACITY

4.9m	Boom	8,000kg	at 2.5m (7 part-line)	··· TR-80ML
		4,900kg	at 3.5m (4 part-line)	··· TR-80M
9.0m	Boom	5,000kg	at 3.5m (4 part-line)	··· TR-80ML
		4,900kg	at 3.5m (4 part-line)	··· TR-80M
13.1m	Boom	4,500kg	at 4.0m (4 part-line)	
17.2m	Boom	4,000kg	at 3.5m (4 part-line)	
21.3m	Boom	2,000kg	at 6.0m (4 part-line)	
Single top		1,400kg	(1 part-line)	

MAX. LIFTING HEIGHT
Boom 21.5m
Single top 22.0m

MAX. WORKING RADIUS
Boom 19.8m
Single top 20.3m

BOOM LENGTH
4.9m - 21.3m

BOOM EXTENSION
16.4m

BOOM EXTENSION SPEED
16.4m / 70s

MAIN WINCH SINGLE LINE SPEED
High range: 106m/min (5th layer)

MAIN WINCH HOOK SPEED
High range: 26.5m/min (4 part-line)

AUXILIARY WINCH SINGLE LINE SPEED
High range: 93m/min (3rd layer)

AUXILIARY WINCH HOOK SPEED
High range: 93m/min (1 part-line)

BOOM ELEVATION ANGLE
-2° – 80°

BOOM ELEVATION SPEED
-2° – 80° / 27s

SWING ANGLE
360° continue

SWING SPEED
2.1rpm

WIRE ROPE
Main Winch
10mm × 118m(Diameter × Length)
7×7+6×Fi(29)
Spin-resistant wire rope
Auxiliary Winch
10mm × 50m (Diameter × Length)
7×7+6×WS(36)
Spin-resistant wire rope

BOOM
5-section hydraulically telescoping boom of box construction.
(stage 2: sequential; stages 3,4,5: synchronized)

BOOM EXTENSION
2 double-acting hydraulic cylinder
1 wire rope type telescoping device

SINGLE TOP
Single sheave. Mounted to main boom head for single line work.

HOIST
Driven by hydraulic motor driven and and via bevel gear reducer.
With free-fall device.
Automatic brake (with foot brake for free-fall device)
2 single winches
With flow regulator valve with pressure compensation

BOOM ELEVATION
1 double-acting hydraulic cylinders

SWING
Hydraulic motor driven planetary gear reducer
Swing bearing
Hydraulically released brake

OUTRIGGERS
Fully hydraulic X-type (floats mounted integrally)
Slides and jacks each provided with independent operation device.

Full extended width	4.4m
Middle extended width	3.4m
Minimum extended width	2.1m

OPERATION METHOD
Hydraulic pilot valve operation

MAX. OUTRIGGER LOAD
8.9t ····· TR-80ML
8.2t ····· TR-80M

HYDRAULIC PUMPS
Gear pumps

HYDRAULIC OIL TANK CAPACITY
172 liters

SAFETY DEVICES
Automatic moment limiter (AML)
Multi-display indication
Over-winding cutout
Working area control device
Outrigger extension width detector
Level gauge
Hook safety latch
Hydraulic safety valve
Telescopic counterbalance valve
Elevation counterbalance valve
Jack pilot check valve

EQUIPMENTS
Crane cab heater (with defroster)
Crane cab cooler
Hydraulic oil temperature indication lamp
Oil cooler
Operation pedals for telescoping
Radio
Multi-display
Television (option)

GENERAL DATA

ENGINE
Model HINO W04C-T
Type 4-cycle, 4-cylinder, direct-injection, water-cooled diesel engine
Piston displacement 3,839cc
Max. output 140PS at 3,000rpm
Max. torque 35.0kg·m at 1,800rpm

TORQUE CONVERTER
3-element, 1-stage unit
(with automatic lock-up mechanism)

TRANSMISSION
Power shift type (wet multi-plate clutch)
High: 3 forward and 1 reverse speeds
Low: 4 forward and 1 reverse speeds

REDUCER
Single-stage hypoid gear speed reducer

DRIVE
2-wheel drive (4×2) / 4-wheel drive (4×4) selection

FRONT AXLE
Full floating type

REAR AXLE
Full floating type (with no-spin differential)

SUSPENSION
Front Parallel leaf spring type
Rear Parallel leaf spring type

STEERING
Fully hydraulic power steering
With reverse steering correction mechanism

BRAKE SYSTEM
Service Brake
Hydro-pneumatic brake
Disk brake
Parking Brake
Mechanically operated, internal expanding duo-servo shoe type acting on drum at transmission case rear.
Auxiliary Brake
Hydrodynamic retarder
Electro-pneumatic operated exhaust brake.
Auxiliary braking device for operations

FRAME
Welded box-shaped structure

ELECTRIC SYSTEM
24 V DC. 2 batteries of 12V (100Ah)

FUEL TANK CAPACITY
190 liters

TIRES
Front 11R22.5-14PR
Rear 11R22.5-14PR

CAB
One-man type
With sun visor and trim
Rubber mounted type
Fully adjustable foldable seat
(with headrest, armrest, seat belt)
Adjustable handle (tilt, telescoping)
Roof windshield lock warning
Intermittent type roof wiper (with washer)

SAFETY DEVICES
Rear wheel steering lock device
Engine over-run alarm
Overshift prevention device
Parking brake alarm

EQUIPMENTS
Centralized oiling device
Tire inflation kit

GENERAL DATA

DIMENSIONS
Overall length	6,695mm
Overall width	2,000mm
Overall height	2,800mm
Wheel base	2,750mm
Tread Front	1,680mm
Rear	1,680mm

WEIGHTS
Gross vehicle weight
Total	11,645kg
Front	5,680kg
Rear	5,965kg

PERFORMANCE
Max. traveling speed	49km/h	
Gradeability (tan θ)	0.6	
Min. turning radius	4.05m	(4-wheel steering)
	7.0m	(2-wheel steering)

TOTAL RATED LOADS

(1) With outriggers set

Unit : ton

Outriggers fully extended (4.4m)						- 360° -
A / B (m)	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m
1.0	8.00 (4.90)	8.00 (4.90)				
1.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)			
2.0	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50		
2.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50		
3.0	6.50 (4.90)	6.50 (4.90)	5.00 (4.90)	4.50	4.00	
3.5	5.50 (4.90)	5.50 (4.90)	5.00 (4.90)	4.50	4.00	2.00
4.0		4.80	4.50	4.50	3.80	2.00
4.5			4.00	4.00	3.50	2.00
5.0			3.50	3.50	3.20	2.00
5.5			3.10	3.15	2.90	2.00
6.0			2.70	2.83	2.70	2.00
7.0			2.20	2.33	2.30	1.80
8.0			2.00 (7.5m)	1.95	2.00	1.60
9.0				1.65	1.75	1.40
10.0				1.40	1.50	1.25
11.0				1.20	1.30	1.10
12.0				1.05(11.6m)	1.10	1.00
13.0					0.95	0.90
14.0					0.80	0.83
15.0					0.67	0.76
16.0					0.60(15.7m)	0.69
17.0						0.60
18.0						0.52
19.0						0.45
19.8						0.40
a (°)	0 ~ 80					

A = Boom length B = Working radius a = Boom angle range (for the unladen condition)

Unit : ton

Outriggers middle extended (3.4m)						- Over sides -
A / B (m)	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m
1.0	8.00 (4.90)	8.00 (4.90)				
1.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)			
2.0	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50		
2.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)	4.50		
3.0	6.50 (4.90)	6.50 (4.90)	5.00 (4.90)	4.50	4.00	
3.5	5.50 (4.90)	5.50 (4.90)	5.00 (4.90)	4.50	4.00	2.00
4.0		4.80	4.50	4.50	3.80	2.00
4.5			3.85	4.00	3.50	2.00
5.0			3.30	3.50	3.20	2.00
5.5			2.75	3.00	2.90	2.00
6.0			2.35	2.55	2.70	2.00
7.0			1.70	1.90	2.05	1.80
8.0			1.45 (7.5m)	1.48	1.60	1.60
9.0				1.15	1.25	1.35
10.0				0.90	1.00	1.12
11.0				0.70	0.80	0.93
12.0				0.62(11.6m)	0.64	0.78
13.0					0.50	0.65
14.0					0.40	0.54
15.0					0.33	0.45
16.0					0.28(15.7m)	0.37
17.0						0.30
18.0						0.23
19.0						0.18
19.8						0.15
a (°)	0 ～ 80					

A = Boom length B = Working radius a = Boom angle range (for the unladen condition)

Unit : ton

Outriggers Minimum extended (2.1m) - Over sides -						
A / B (m)	4.9m	5.6m	9.0m	13.1m	17.2m	21.3m
1.0	8.00 (4.90)	8.00 (4.90)				
1.5	8.00 (4.90)	8.00 (4.90)	5.00 (4.90)			
2.0	7.00 (4.90)	7.00 (4.90)	5.00 (4.90)	4.50		
2.5	4.90	4.90	4.70	4.50		
3.0	3.60	3.60	3.50	3.70	3.90	
3.5	2.80	2.80	2.70	2.90	3.10	2.00
4.0		2.20	2.10	2.30	2.50	2.00
4.5			1.70	1.90	2.05	2.00
5.0			1.35	1.55	1.70	1.75
5.5			1.07	1.27	1.40	1.45
6.0			0.85	1.05	1.17	1.22
7.0			0.52	0.72	0.82	0.87
8.0			0.40(7.5m)	0.50	0.60	0.64
9.0				0.30	0.40	0.44
10.0				0.18	0.27	0.31
11.0					0.16	0.20
a (°)	0 ～ 80			25～80	43～80	53～80

A = Boom length B = Working radius a = Boom angle range (for the unladen condition)

PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE EXTENDED:

1. Values within ( ) are for the TS-80M type.
2. The total rated loads shown are for the case when the outriggers are set horizontally on firm ground. The values are based on the crane strength.
3. The weights of the slings and hooks are included in the total rated loads shown.
4. The total rated load is based on the actual working radius including the deflection of the boom.
5. The chart below shows the standard number of part lines for each boom length.
   The load per line should not exceed 1.25t for the main winch (1.23t in the case of the TR-80M type) and 1.4t for the auxiliary winch.

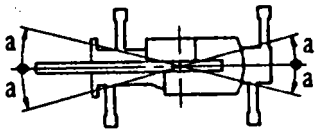
A	4. 9m	5. 6m	9. 0m	13. 1m	17. 2m	21. 3m	Single top
H	7 (4)	7 (4)	4	4	4	4	1
Hook type	8t Hook (4.9t Hook)						1.4t Hook
Hook weight	7 5 kg (7 0 kg)						2 0 kg

A = Boom length H = No. of part-line J = Jib / Single top

Values within ( ) are for TS-80M.

6. As a rule, free-fall operation should be performed only when lowering the hook alone. If a hoisted load must be lowered by free-fall operation, the load must be kept below 1/5th of the total rated load and sudden braking operations must be avoided.
7. The total rated load for the single top shall be the value obtained by subtracting 60kg from the total rated load of the boom and must not exceed 1.4t.
8. The hoisting performance for the "Over sides" range will differ according to the extended width of the outriggers. Operations should be performed in accordance with the performance corresponding to the extended width.
   Also, although the hoisting performances for the "Over front" and "Over rear" ranges are equivalent to those of the "Outriggers fully extended" condition, the front and rear ranges (angle a) will differ according to the width to which the outriggers are extended in the left and right directions.

Extended width	Middle extended (3.4m)	Minimum extended
Angle a°	25	10



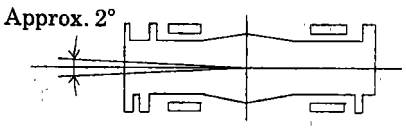
(2) Without outriggers (Over front)

(Unit: Ton)

Working radius \ Boom length	4.9m – 9.0m
Less than 5.0	1.00
Boom angle range (for the unladen condition)	0° – 80°

PRECAUTIONS TO BE TAKEN WHEN THE OUTRIGGERS ARE NOT MOUNTED:

1. The total rated loads shown are for the case when the crane is set horizontally on firm ground with the air pressure of the tires being at the prescribed pressure. The foundation, working conditions, etc. should be taken into consideration adequately when using the crane for actual work. (Tire air pressure: 7.00kg/cm^2).
2. The weights of the slings and hooks are included in the total rated loads shown.
3. The total rated loads are based on the actual working radii into which are included the deflection of the boom and the tires.
4. Hoisting cannot be performed over sides when the outriggers are not used. Operations should be performed with the boom being inside a 2° area (1° each to the left and right) over front of the carrier.



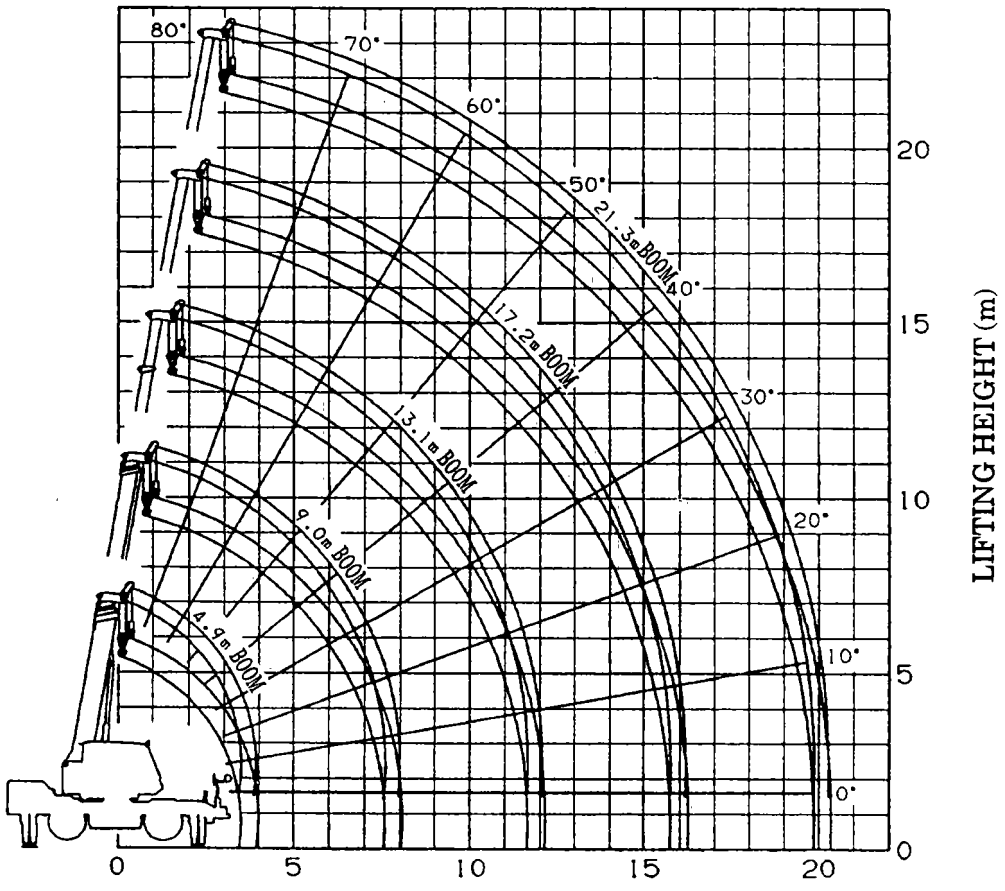
5. The chart below shows the standard number of part lines for each boom length.

Boom length	4.9m – 9.0m
No. of part-line	4

6. The total rated load for the single top shall be the value obtained by subtracting 60kg from the total rated load of the boom.

7. Free-fall operations should not be performed without outriggers.
8. Booms over 9.0m in length should not be used without outriggers.
9. The "Drive, Speed Selection" switch should be set to "4-wheel · Lo" for creeping while hoisting a load.
10. When creeping while hoisting a load, the swing brake should be applied, the load should be kept as close to the ground as possible but not touching the ground and the speed should be kept at 1.6km/h or less. In particular, any abrupt steering, starting or braking must be avoided.
11. Crane operations should not be performed when creeping while hoisting a load.

WORKING RADIUS - LIFTING HEIGHT



NOTES:

1. The deflection of the boom is not incorporated in the figure above.
2. The figure above is for the case when the outriggers are fully extended (360°).

DIMENSIONS (1/100)